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M. E. McIVER, Editor

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The objects
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social and economic welfare
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A Second Floating Bridge Across Lake Washington

Steve Lowell, Belleview, Wash.

Three tugs eased a monstrous concrete pontoon through the Lake Washington Ship Canal recently to become a link in the second floating bridge across Lake Washington, the water barrier which stretches 19 miles along the east side of Seattle proper.

The bridge has become necessary to connect population-bursting Seattle with suburbs across the narrow lake.

The ponderous concrete and steel box, shaped like a barge, was towed from a graving dock on the city's Puget Sound waterfront through the canal and its Chittenden Locks up into the long body of fresh water.

It was the first of 33 which will form the bridge, scheduled for completion in June, 1963.

The pontoon, 360 feet long and 60 feet wide, weighs 4,763 tons. It and the other block-like bridge sections are being built by the Guy F. Atkinson Company in the graving docks of the General Construction Company.

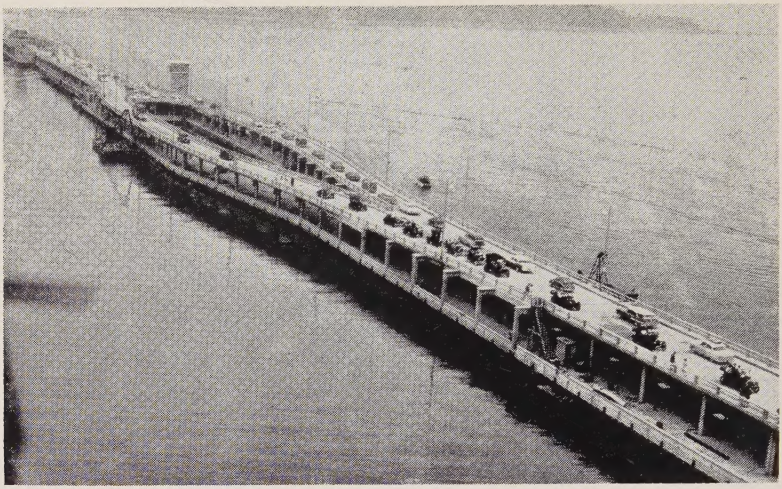
The section was towed to a storage site to be kept about a year while the others are completed and while the bridge approaches are under construction. Then the pontoons will be moved into place paralleling the original Lake Washington Floating Bridge but about four miles north of the old one. Once in place, the sections will be bound together with steel cable along the sides and bottom.

The new bridge will have a vertical lift draw span, rather than the type used in the first bridge across the lake and the other floating bridge in the Seattle area, the new Hood Canal Bridge, which links the Kitsap and Olympic peninsulas, west of Puget Sound.

The old Lake Washington Bridge and the Hood Canal Bridge have U-shaped sections, and roadway pontoons slip back into the gaps between the arms of the "U"s to let boats pass through. When ships have passed, the straight sections are slid back into place, and traffic moves again around the U-shaped sections, which have become "O"s.

The old lake bridge, completed in June, 1940, is a four-lane structure about 1¼ miles long.

The new bridge also will be four lanes wide. The floating part will be about 1⅓ miles long, the west approach will be about four-fifths of a mile long and the east approach about one-fifth of a mile long.



The two drawspans of the Hood Canal floating bridge have been shoved against each other to permit traffic to move across the structure. When a ship must pass through, the straight drawspans are pulled back into the U-shaped "well" sections. The old cars are part of a parade.

The first bridge cost $8,854,400. In comparison, the pontoons for this second bridge are costing $10,900,000. And the approaches for the second bridge are costing another $3,518,767.

As has been mentioned, this will be the third bridge of this unique type in watery Western Washington, which is chopped up by Puget Sound, with its 2,000-mile shoreline, big Lake Washington, not-quite-so-big Lake Sammamish, a few short miles east, and many rivers and creeks.

During the summer, traffic began moving across the Hood Canal Bridge, and the finishing touches were expected to be complete by mid November.

Hood Canal is a 60-mile-long, hook-shaped finger of Puget Sound. This slender finger of water, from one to five miles wide, almost made an island of big Kitsap Peninsula and practically isolated it, except for ferries, until the bridge was built. But now the Kitsap and Olympic peninsulas are bound by a floating highway link close to the mouth of Hood Canal, near Port Gamble.

The designers and builders of this 1⅓-mile long bridge, which cost $26,750,000, had a much greater problem to surmount than the builders of the Lake Washington spans did.

The Hood Canal Bridge must stretch and contract twice a day with the outgoing and incoming tide, because the Canal, like the Sound, is an inlet of the Pacific. The bridge had to be designed to rise and fall 18 feet.

In addition, it must give with storm waves to a limited extent. Early in October, wind up to 50 miles an hour caused waves large enough to make the bridge bob up and down 8 to 10 inches.

There was another stress the builders had to make allowance for, and Yuba Erectors was completing that chore in mid-October. The tide makes the water in the Canal run like a river toward the sea on the ebb flow and from the sea on the other end of the cycle. Therefore the bridge had to be anchored in place or it would bend like a bow with the tidal flow.

To brace the bridge, 42 massive concrete blocks, each weighing 550 tons, were strung on the floor of the Canal paralleling the sides of the bridge. Cables were strung from the bridge to those blocks to hold the span in place.

One of those anchors, which are 40 feet long, 20 feet wide and 15 feet high, slid 80 feet out of place into water more than 300 feet deep, and Yuba had to cage it by dropping a huge steel frame over it. That operation was directed by Leiter Hockett, Seattle deep-sea diver, who observed the work from a diving bell.

The 23 pontoons were assembled and tensioned in groups of three, about 1,080 feet long, and towed to the bridge site. When all were in place, Yuba joined the pontoon ends with bolts and epoxy cement, and cables running lengthwise through the tops and bottoms of the pontoons were post-tensioned with a force of about 7,393,000 pounds exerted between the pontoon ends.

The roadway on this two-lane bridge rests on pillars which rise several feet above the top surfaces of the pontoons. That is to allow storm waves to pass under traffic.

Let's Clean House in Professional Recruiting

Charles E. Juran, Redlands, California

Several years ago this author examined professional recruiting tactics used in selecting new engineers from the nation's colleges and universities.[1] Recruiters' techniques were found to be generally good with deficiencies, where they were noted, in minor matters of procedure and detail.

It is entirely possible that these good practices still exist at the college recruiting level. Where one examines the process by which professional people move within industry, however, it is quite another matter. The remarkable fact is that industry does a far better job recruiting college graduates than in hiring experienced personnel already in industry. Having gone through this process, one becomes convinced that personnel offices and professional recruiters ought to review their techniques and procedures if they are to remain competitive.

Among the rather common practices encountered by the author during his travels were the following:

—Having a definite interview appointment time, he was obliged to wait over 1½ hours in a lobby until the interviewer became available.

[1]"The Engineering Graduate looks at College Recruitment Programs" *Personnel*, Jan. 1955.

—After spending a Saturday and considerable air fare to visit a prospective employer at the latter's request, he was never to hear another word from them one way or the other.

—After two 175 mile round trips for interviews with one employer he was kept in the dark for two months, then sent a mimeographed form letter which had no bearing on the actual case.

—After driving 80 miles to an interview he was told that the previously cited salary requirements could not be met. The purpose of the interview was not disclosed.

This is not to say that such treatment of prospective employees is universal. It has appeared to the author, however, to be the rule rather than the exception. The principal conclusion which can be drawn is that the Personnel people, in their preoccupation with the mechanics of what they are doing, have lost sight of the long range objectives and the reactions of others to their activities.

The Personnel department must bear the final responsibility for these practices, whether or not they are the actual culprits. The job of education of all those engaged in the recruiting process is theirs, as is the task of continuing surveillance. If shabby practices are creeping in it is Personnel's inescapable responsibility.

Changing positions within industry is not an easy situation in any analysis. The employee wants to protect his present status until he is located, to make his move with a minimum of personal time, expense, and frustration, and to be aware of his status with prospective employers at all times. A certain degree of secrecy is necessary, of course. The prospective employer, on the other hand, wants a free rein to evaluate the applicant's past performance and follow up references. Obviously some common ground must be found here.

There are four principal means by which prospective employers can gain decision-producing information about a candidate. These are:

1. A professional resume.
2. An employment application.
3. The personal interview.
4. Contact with reference.

The resume is the applicant's door-opener and is his sole responsibility. Much has been written about the appropriate preparation of these and lately, professional services have sprung up to assist an applicant in the preparation of a thoroughly professional resume. A good deal of grief could be avoided on both sides of the resume exchange if the applicant would put himself in the place of the individual who will be reading his resume. The obvious requirements would then occur to him; a brief summary at the beginning for screening purposes, emphasis on the meaningful experiences and data, and reduction of other outlines to summary or outline form.

Filling out an employment application is usually a mild irritant in

which the data on the resume must often be repeated. Putting the necessary information in the employer's format is something which probably cannot be avoided, but where lengthy descriptions are involved it should be possible to reference the resume. If the applicant is sent his application ahead of time, he can complete it at his leisure and not take up interview time.

It is at the time of the interview that the system frequently begins to break down. The applicant is often kept waiting an unnecessary length of time; needless to say, interview appointments (like any appointments) should be kept on time. It is good personnel relations to set up a separate structure for professional applicants. Perhaps it is democratic to have engineers wait in line with labor applicants, but it is not good personnel relations. The applicant should be provided ahead of time with the general corporate data (organization charts, annual report, history, etc.) so that interview time need not be consumed with transmitting this sort of information. The type of preparations cited above do not assure a good interview, but they generally will assure that the applicant will at least have an open mind.

The interviews experienced by the author seemed to fall into a pattern of either friendly get-togethers in which the interviewer sought no meaningful information, or bumbling attempts in amateur psychology to outwit the applicant. An interviewer should keep the applicant on his toes, although by no means tense, and should keep things moving. Above all, he should bear in mind that two people are there for a mutual exchange of information in an atmosphere wherein personality traits can be evaluated as well. An applicant's human nature can be studied in a discussion of magneto-hydrodynamics just as effectively as during a talk on the weather, and the time will be much better spent.

It is the applicant's responsibility to provide sufficient references to enable the employer to conduct a meaningful check of his abilities, experience, and other data cited in the resume. At least a portion of these references should be with his present employer; it is generally possible to notify several people without letting the cat out of the bag. The recruiter must exercise discretion where it is called for, of course, but he has a definite right to contact references and utilize this source of information.

On the basis of the practices encountered, and mentioned above, a set of ground rules for recruiters readily suggest themselves. No doubt some will appear obvious; nevertheless, the extent to which they are ignored is appalling.

1. Acknowledge all applications and inquiries, regardless of what further action, if any, is to be taken.
2. Keep the applicant informed of his status. This means immediate notification once a decision of any sort is reached. It also means continuing communication, all during the evaluation and negotiation process, if only to say, "We are still working on it."
3. Do not schedule unnecessary interviews. Determine by phone or

mail if you really have something to talk about, if salaries are in a range to be negotiable, if experience is sufficient and the type desired, etc.

4. Keep interview appointments on time. Any businessman worth his own salt ought to be able to keep an appointment of his own making. If not, he should delegate the responsibility to someone authorized to make a decision.
5. If a decision has been made not to make an offer, let the applicant know about it. An inexpensive phone call or letter is worth much in good will. Even a form letter is preferable to the frustration of silence.
6. Keep committments to communicate with the applicant. Of all the irritations encountered perhaps none is more annoying than the silence which follows "I will definitely call you by Friday". The call *must* be made, if only to say there is nothing yet to report.

It is recognized that the applicant has certain responsibilities too, and that not all of these are being met. Aside from the prerequisites of general professional ethics (the number of falsifications on application blanks is appalling; they are found principally in the areas of citing education and previous salaries) the applicant has the same communication responsibilities as the employer. These include acknowledging of offers and notification of appropriate action, when taken.

It should be pointed out that, in general, where good practices were encountered they were usually found throughout an organization, and where techniques were poor, there were few spots of good performance to be found. In other words, good recruiting practices must have resulted from *policy,* not from the individual efforts which went into the recruiting process.

The Personnel department should recognize the public relations aspects of good treatment to prospective applicants, whether or not they become employees. A poor reaction on the part of an applicant can last a long time; perhaps until such time as he may become a customer of the firm or have a similar sensitive relationship. In personal contacts alone the damage done by implanting poor aftertaste may be appreciable. For the Personnel department this may well be a question of survival, since the growth of independent, professional recruiting organizations, in part a result of poor practices in industry, may well partially replace the corporate recruiting office if the independents can do a better job.

The comments of an elderly gentleman in Hersey's "The Wall" come readily to mind: "I succeeded, when I did, because I was thinking about how someone else would react to what I did."

Who Says We're Professionals?

Laurence W. Pathe, Editorial Specialist, Product Support Publications
Flight Propulsion Division, The General Electric Company

My friend, a visiting professor from a large, eastern State University, arrived breathless and a little late for our cocktail rendezvous. I had met him several years earlier in connection with a technical writing assignment on which I needed his technical assistance.

"What a day!" he greeted me, "I've been trapped in a series of meetings since 9 o'clock this morning, and I've heard nothing but groups of engineers moaning that nobody loves them."

"You must be kidding," I grinned, "Isn't this a regional conference on engineering education?"

"That's what the advance notices said," he agreed, "but somehow the subject always turns to a discussion of ways in which engineers can improve their acceptance as professional men."

Our talk turned to personal reminiscence as we sipped our Martinis in the funereal gloom of the cocktail lounge, but our original subject insistently returned to my mind on the following day. Perhaps the fact that my own professional society, composed of technical writers and editors, had frequently resorted to a similar kind of verbal hand-wringing about their reputation was the reason for my preoccupation with the subject.

* * *

Is the almost-psychopathic concern of our two groups about their respective professional reputations really justified? Are laymen as a whole ignorant of our contributions to their welfare? Are they stupid? Are they being deliberately obtuse? . . . or is it possible that we, ourselves, are responsible for our lack of acceptance? Are we lacking in some vital element that would place us alongside such classical professions as medicine, theology, and the law? Yes, I'm afraid that lack exists, and that it's rapidly becoming critical.

It's true that we have many talented, highly-trained, hard-working people in each of our professions. Both of us have similar codes of ethics — codes of which we can be justifiably proud. Each of us can point to his works as examples of his craftsmanship. We are not subject to the same handicaps as the doctor and the minister, whose results can neither be seen nor predicted; our results are not only predictable, they are tangible, material things that can be seen by everyone. How, then, do we suffer by comparison with the members of these professions?

Neither engineers nor technical writers have been around long enough to have developed a tradition of professionalism. Whereas the classical professions have been in existence for hundreds or even thousands of years,

our own endeavors have spanned only a few decades. No facile code of ethics, no matter how well conceived; no membership in a group bound together only by "a separate, identifiable, communicable body of knowledge" can possibly gain for its members the public esteem and veneration held by a group whose origin is rooted in antiquity. But tradition has its qualitative aspects as well as its quantitative ones. The basic problem cannot be solved simply by letting it age like a Roquefort cheese.

Let us examine the *kind* of tradition that the accepted professions hold. Medicine has its Schweitzers and its Dooleys; its tradition is an unbroken line going back through St. Luke to Aesculapius. The Law has its Oliver Wendell Holmes and its Blackstones stretching back to Moses, the Great Lawgiver. The ministry has its Phillips Brooks, its Wesleys, its Luthers and its St. Augustines, going back to Christ Himself. The one thing that distinguishes the members of these professions from those of our own is simply this: those men never lost sight of the reason for man's existence. Not one of them either lived or died a rich man; every one of them was dedicated to enriching the lives of mankind, to easing its burdens, to sharing and solving its problems. The same challenges that faced the founders of those professions face us today — in Africa, in southeast Asia, in Central and South America, to name just a few. Can we point to a Schweitzer, or to a group like MEDICO, or to any individual or group of dedicated people like the missionaries of the Catholic or Protestant Churches? Until we can, any talk of professionalism is worse than inappropriate — it's presumptuous!

Some engineers are already in a position to contribute to the stature of their profession and of their country in the world's problem areas; at least, they're on the scene. No matter how dedicated a technical writer, he will always be far from the day-to-day, front-line contact in places where the field engineer carries on his work. Nevertheless, opportunities for participation are plentiful for both. Engineers who shield themselves from their often-primitive surroundings at these outposts by living in compounds — little patches of "culture" made in USA — aren't really facing challenges; they're facing engineering problems. They neither communicate with other peoples nor attempt to understand them; they ignore both the people and their real problems by resolutely staring at their own blueprints for their own concepts of Utopia.

The related problems of improving man's material surroundings and developing a common bridge of understanding present tremendous challenges, but who is in a better position to accept those challenges than the engineer on the one hand, and the communications specialist on the other?

Solving the problem of professional recognition isn't really so difficult: we simply have to start acting like professional people. Not just like experts — like *professionals!* Not all the important realities of life are made of steel, or stone, or benzene rings. It's also important to realize that we're all in this thing together, and that dedication to human welfare isn't

the exclusive property of the doctors and the ministers; that if the human race can progress, the Ghanaian tribesman and the Laotian peasant are just as much involved in the process as the American engineer and the man from the State Department.

It has been said that all things carry the seeds of their own destruction. The Industrial Revolution that brought our crafts into existence, also spawned over-specialization and occupational isolationism. No longer do we raise and preserve our own foodstuffs; we buy them "ready to heat 'n eat". No longer do we extend help to a neighbor; we contribute to organized charities. No longer do we teach even our own children to reach out for the intellectual, artistic, and spiritual experiences that give meaning and richness to their lives; we train them in the techniques of making a fast buck! We talk about "the breakdown in communications" with great concern, but we talk to each other — not to the people whose understanding we covet. Our own over-specialization has isolated us from the society in which we live. Communications is a two-way street; it's almost an illustration of Newton's third law. If the action of communicating doesn't result in the reaction of understanding, the process has no effect. If our deeds don't confirm our words, no quantity of ringing phrases will capture the minds of our audience.

Each generation must pay its own installment on the inalienable rights that were presented to it; and it must pay in the coin of duty and responsibility. We can prepare ourselves to pay our own installment by broadening our own horizons and the horizons of our children and our engineering students. We can use the influence of our professional societies to broaden the scope of education — even to making the various engineering curricula into graduate-level studies to be offered only to students who have obtained an acceptable general education. The classical professions all insist on the standard of preparation for good reasons. As individuals, we can begin to read non-technical books for a change; we can attend an occasional symphony concert or an opera, or we can spend an occasional afternoon at an art museum. By exposing our minds to the ideas of other *kinds* of people, and by participating in a wider variety of experiences, we will expand our own creativity and our ability to communicate with others. Conversely, their knowledge and appreciation of our real value will increase.

Public breast-beating about our acceptance as professionals only calls attention to our own shortcomings. When we've earned the title "Professional", we can dissolve our Public Relations committees; the public will confer the honor voluntarily.

Engineers' Week — February 18-24

"Economic Growth Through Professional Engineering," has been selected as the theme for the 1962 National Engineers' Week. It is hoped that engineering societies and industry especially will call the public's attention to the important role played by science and technology in the national economic growth of this great land.

Books of Interest to Engineers

Keep posted . . . Know what is happening in your profession . . . If the book you need is not listed, we can get it for you. The A.A.E. book department is always glad to make recommendations on any technical subject. The service was inaugurated for your convenience. Make use of it.

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Antenna Engineering Handbook by Henry Jasik, Jasik Laboratories. 1961. $22.00

Provides in practical fashion essential principles, methods, and data to help in solution of all kinds of antenna problems from designing an antenna to radiate energy in an omni-directional pattern to determining the lowest theoretically obtainable standing wave ratio over a required bandwidth.

Structural Engineering for Professional Engineers' Examinations Including Civil Engineering Review by Max Kurtz, Consulting Structural Engineer. $9.00

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Engineering Fundamentals for Professional Engineers' Examinations, by Lloyd M. Polentz, P.E., Instructor in Engineering Fundamentals for the Univ. of Calif. Extension Div. 1961. $9.50

A comprehensive, authoritative review of engineering fundamentals that will help you to prepare for and pass the fundamentals section of your state licensing examination.

Programming and Coding for Automatic Digital Computers, by G. W. Evans II and Clay L. Perry, Consultant, Mathematical Sciences Dept. Stanford Research Institute and Director of the Computation Facility, U. of Cal., and G. W. Evans is Mgr., of same dept. at Stanford Research Inst. $9.50

It highlights systematic procedures that enhance programming and coding skills and explains the computer's basic design so that you can use it with maximum effectiveness.

Domestic & Commercial Oil Burners, Installation and Servicing, by Charles H. Burkhardt, Nat'l Sec'y of Distribution Div. of Oil-Heat Institute of America. 1961. $9.00

Electrical Contracting, by Ray Ashley (Practical Business Methods for Profitable Contracting.) Mr. Ashley is a registered Professional Engineer and Honorary Member of Chicago Elec. Estimator's Ass'n. 1961. McGraw-Hill Book Company, Inc. $10.00

Covers every facet of the electrical contracting business, from initiating a business to its continuance from year to year—and provides extensive data on overhead cost studies heretofore unavailable in a single volume.

Theory of Elastic Stability, 2nd Ed., by Stephen P. Timoshenko. McGraw-Hill Book Co., Inc. $15.00

Meteor Science and Engineering, D. W.

R. McKinley, Assoc. dir., Radio and Electrical Engineering Div., National Research Council, Ottawa, Canada. 1961. $12.50

The book emphasizes radio techniques, without ignoring the very important contributions from optical research. It summarizes the major observational and theoretical developments in the science.

Analogue Computation, Volumes 1, 2, 3 and 4 by Stanley Fifer, President, Dian Laboratories. 1961. $39.50

These volumes give an extensive treatment and wide and detailed range of information on the subject. Volumes 1 and 2 are devoted to general functions, theory and operation; volumes 3 and 4 cover the broader aspects of the analogue field, advanced applications and practical examples.

Nuclear Pulse Spectrometry, Robert L. Chase, Associate Head, Instrumentation Div., Brookhaven National Laboratory. 1961. $8.50

This is the first comprehensive discussion of nuclear pulse spectrometry in book form. Contains helpful hints on diagnosing and repairing spectrometer troubles and useful design techniques that will shorten instrument design time. Covers a wide range of material.

John Wiley and Sons, New York

Systems: Research and Design, 1961, Donald P. Eckman, Prof., Instrumentation Engineering, Case Inst. of Tech. $8.50

Excellently prepared account of the First Systems Symposium at Case Institute.

Probability and Experimental Errors In Science, 1961, And Elementary Survey, written by an experienced scientist, Lyman G. Parratt, Prof., Physics, Cornell University. $7.25

Unit Operations of Sanitary Engineering, by Linvil G. Rich, Prof. and Head C.E., Clemson College. $10.75

Material is well prepared and concentrates on the fundamental principles of the design of unit operations.

Principles of Refrigeration by Roy L. Dossat, Assoc. Prof. of Refrigeration and Air Conditioning, University of Houston. 1961. $11.50

Emphasis is placed on the cyclic nature of the refrigeration system, care is taken continually to correlate theory and practice through the use of manufacturer's catalog data and many sample problems.

Simplified Mechanics and Strength of Materials, 2nd Ed., by Harry Parker, Emeritus Prof. of Architectural Construction of Univ. of Penna. 1961. $6.75

Provides basic information in the field of mechanics and strength of materials without the use of advanced mathematics. Knowledge of arithmetic and algebra is sufficient. This up-to-date version is a thoroughly tested manual.

Prestressed Concrete Cylindrical Tanks by L. R. Creasy, Deputy Chief Structural Engineer in Directorate of Public Works at Ministry of Works, London. 1961. $6.75

Contract Documents

A new document, entitled "Concerning Some Legal Responsibilities in the Practice of Architecture and Engineering and Some Recent Changes in the Contract Documents", is now available from the Engineers Joint Council, 345 East 47th Street, New York 17, N. Y. for $1.00.

Authored by John R. Clark, Esq. of Barnes, Dechert, Price, Myers & Roads, Attorneys at Law, Phila., Pa., the document is based upon a report developed by the EJC-AIA Liaison Committee.

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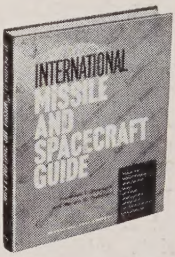

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